

DESCRIPTION OF SOME CRETACEOUS AMMONITES FROM PONDOLAND

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With three plates.

THE ammonites here described were purchased with other fossils from Mr J. VENTER, who collected them on the coast of Pondoland, near the mouth of the Umzamba river.

Phylloceras umzambiense n.sp. Pl. XXIV, figs. 1—3.

The whorls of the discoidal shell are strongly involute and higher than broad. The greatest thickness of the whorl lies internal to the middle of the flanks. The external surface is broadly convex and the sides are slightly flattened. The umbilicus is narrow and deep, the umbilical surface moderately inclined.

The ornamentation consists of numerous, crowded, thin, wire-like ribs. These ribs commence deep down in the umbilicus and, on passing on to the flanks, swerve forwards; from near the middle of the flanks to the periphery they are practically straight and directed slightly backwards. The outer end of the ribs may be slightly stronger than the inner end, but on one portion of the shell the ribs are stronger on the internal half of the flank than on the outer. Short ribs, starting at or near the middle of the flanks and running across the periphery, are regularly intercalated between the long ones. Sometimes, though very exceptionally, these ribs start nearer to the umbilicus. They all run practically straight to the periphery, in the same direction as the long ribs. The surface of the shell is weakly corrugated near the umbilicus. The corrugations are low and short, disappearing before reaching the middle of the flanks. They also disappear on the umbilical surface. Their curvature is the same as of the ribs in this region. Their breadth is such that they bear from four to six ribs.

The lobe-line is phylloid. The anterior terminations of the saddles are broad and well rounded. This fact, however, is only seen well through the transparent shell; if this be removed with acid the lobe-line seems to suffer easily. In general the lobe-line agrees very well with that of *Phylloceras Forbesianum* D'ORB sp. The siphonal saddle, however, is not so sharply pointed as in that species. The external lobe has nearly the same length as the first lateral lobe. The external saddle and the first lateral saddle are both symmetrically divided by a secondary lobe. The second lateral saddle shows three anterior terminations. The auxiliary saddles, six in number, become rapidly smaller.

Measurements:

Diameter	...	...	...	44 mm. (1)
Height of last whorl	...	...	...	27 „ (0.61)
Thickness of last whorl: actual 16 mm. was probably	17	„	(0.39)	
Width of umbilicus	...	...	...	2 „ (0.05)

Superficially there is some resemblance between this form and *Phylloceras Nera* FORBES sp. The Indian species, however, has a series of radial sulci, around the umbilicus, which are apparently absent in our form. The radial corrugations of our form are apparently absent in *P. Nera*. The new species is also relatively thicker than *P. Nera*. There is a great difference between the

lobe-line of the new form and that of *P. Velledae* and allied forms. In the Indian forms the external lobe is very much shorter than the first lateral lobe, whereas in the Pondoland ammonite the two lobes are nearly of the same size. There is close agreement between the lobe-line of our form and that of *Phylloceras* sp. mentioned by Woods from Pondoland ("The Cretaceous Fauna of Pondoland," *Ann. S. Afr. Mus.* vol. iv. Pt. vii. Pl. XLI, fig. 4). There is, however, difference in the shape and the ribbing of the shell. There is also a great resemblance between the suture-line of *P. Rogersi* KITCHIN and that of our form. The shells differ, however, in shape and ornamentation.

The specimen is imperfect and wholly septate. One side of the last whorl has weathered away.

Gaudryceras amapondense n.sp. Pl. XXIV, figs. 4, 5.

Shell discoidal, compressed. Sides of whorl slightly convex and convergent towards the rounded periphery. Last whorl rather rapidly increasing. The umbilicus is large, the umbilical surface fairly steep and the umbilical margin strongly convex. Whorls higher than broad and covering about half of the flanks of the preceding whorl.

Whorls ornamented with low ribs, which are narrow within the umbilicus and become broader towards the periphery. Between these other ribs are intercalated, which are only faintly visible at the umbilicus. Ribs of unequal breadth and separated by unequal distances. Both ribs and interspaces are covered by numerous fine ribs. The last whorl shows four ribs, at a distance of about 90 degrees from each other, which are much broader and thicker than those in their immediate vicinity. One of these ribs had to be removed in studying the suture-line and was seen to correspond with a constriction on the internal cast. The last of these ribs is immediately preceded by three others, which are also broad and thick and separated by broad interspaces. The umbilical portion of all the ribs is concave forwards, on the sides they are convex forwards and near the ventral border they are again concave forwards. Their ventral portion was not seen. Inner whorls covered with finer ribs; here and there is a coarser one followed by a deep groove.

The suture-line has not been seen completely. That which is visible consists of a portion of the first lateral lobe, both lateral saddles, one auxiliary saddle and a portion of another. The remaining space between the visible portion of the last saddle and the umbilical suture is slightly broader than the breadth of this portion. The auxiliary lobes and saddles become smaller towards the umbilical suture and run slightly backwards. Further detail may be gathered from the figures.

Measurements:

Diameter	...	...	...	...	109 mm. (1)
Height of last whorl	...	...	...	...	47 „ (0.43)
Thickness of last whorl	...	...	...	perhaps 41	„ (0.38)
Height of penultimate whorl	...	...	...	about 20	„ (0.18)
Thickness of penultimate whorl	...	...	...	9	„ (0.08)
Diameter of umbilicus	...	...	...	28	„ (0.26)

As the thickness over the longest diameter cannot be accurately given, the three first measurements are again taken at about 90 degrees back from the anterior end.

Diameter	...	...	...	...	88 mm. (1)
Height of last whorl	...	...	...	...	38 „ (0.43)
Thickness of last whorl	...	...	...	...	29 „ (0.33)

The specimen is entirely septate. No species is known to me with which the new form could be confounded. Remarkable in the species, although by no means singular, is that the breadth of the last whorl is relatively greater than that of the preceding one, and further the extraordinary height of the penultimate whorl with regard to its breadth.

Tetragonites teres n.sp. Pl. XXV, figs. 1, 2.

Shell discoidal, umbilicated, with a few rapidly increasing whorls. Whorls higher than broad. Greatest thickness at the umbilical margin. Sides of whorl flat, becoming rounded towards the periphery. External surface strongly convex, rounding off gradually into the sides. Umbilical surface very steep. Inclusion two-thirds. The surface of the shell is smooth and covered with growth-lines, which are only visible with a magnifying glass. Two faint constrictions are visible, having the same shape as those of *Tetragonites epigonum*. Lobe-line very imperfectly known; as far as visible showing the general type of *Tetragonites*.

Measurements:

Diameter	...	69 mm. (1)	At diam. of 57 mm. (1)
Height of last whorl	...	39 „ (0.57)	31 „ (0.54)
Thickness of last whorl	?		26 „ (0.46)
Diameter of umbilicus		14 „ (0.20)	

There is only one specimen upon which the above description has been based. About a quarter of its last whorl is probably body-chamber. The specimen has suffered somewhat from lateral compression. A portion of the last whorl, however, has not been compressed at all, and in this region the measurements on the diameter of 57 mm. have been taken.

The new species differs from *Tetragonites Timotheanum* MAYOR sp. and from *T. epigonum* KOSSMAT by the fact that its whorls are higher than broad; in the two species mentioned they are broader than high. *T. Timotheanum* is also more involute and its whorls have an angular section. The section of the whorls of *T. epigonum* is also more trapezoidal than that of *T. teres*. The height of the last whorl is greater than half the diameter of the shell in the new species, whereas in *T. Timotheanum* it is equal to or, especially in *T. epigonum* and young specimens of *T. Timotheanum*, less than half this diameter.

Holcodiscus Faku n.sp. Pl. XXV, figs. 3, 4. Pl. XXVI, figs. 1, 2.

There are two specimens which are regarded as belonging here. The following description has been taken from the smaller of the two.

Shell discoidal. Whorls higher than broad. Greatest thickness at the umbilical edge. Sides of whorl nearly flat near the umbilical margin, becoming more and more convex towards the periphery. External surface strongly convex. Umbilical surface low and very steep. Involution moderate, between one-half and two-thirds of the preceding whorl being embraced.

Umbilical surface smooth. Sides of whorl covered with numerous, high and narrow ribs. All ribs pass with undiminished strength over the outer surface. The ribs emanate partly from strong, sharp, radially elongated tubercles, which have a flat and steep anterior surface and which stand on the extreme umbilical margin. The umbilical edge of these tubercles passes for a short distance on to the umbilical surface and stands practically perpendicular on the lateral edge of the protuberances. The ribs emanate from these tubercles in an irregular way. Sometimes the edge of one rib is continuous with the edge of the tubercle, while another rib emanates from its side. In other instances the edges of two ribs are continuous with the edge of the

tubercle. Sometimes the edge of the tubercle is continuous with one rib, while another rib begins at each of its sides. Again, one rib is continuous with the edge of the tubercle, while another emanates from one side and two from the other. Sometimes the edge of the tubercle ends in a groove between two ribs. Now and then one of the ribs starts independently of any tubercle at the extreme edge of the umbilicus. Now and then, by no means at regular intervals, a short rib is intercalated between two others; these short ribs start at about the middle of the flank and behave further as the others. At irregular intervals the whorl is traversed obliquely by a deep groove, which is bordered behind by a thick ridge and in front by a narrow ridge. Its course is sinuous, being slightly convex forwards near its inner end, concave forwards near its middle and convex forwards at its outer end and on the external surface. The ridge in front of the groove starts on the umbilical surface, just inside the umbilical edge and passes on to the flank without forming a tubercle. It is not in touch with any other rib. The rib behind the groove starts at an umbilical tubercle and either bifurcates therefrom with another rib, or is the only rib continuous with the lateral edge of the tubercle, or emanates from the anterior surface of a tubercle, from which another rib starts in continuous line with its lateral edge and still another from its posterior side. This rib behind the groove cuts off two or three other ribs. As it crosses the external surface it becomes thicker and in the last two sulci of the larger specimen very much so. There are six of these grooves on the last whorl. The course of the other ribs is somewhat irregular. Many of them are very slightly convex forwards near the middle of the flank. A few are straight in this region. They mostly cross the external surface with scarcely any convexity forwards. In some of those near the sulci, however, the forward inflexion on the external surface is greater. The spaces between the ribs are much broader than the ribs and also broader than the nearest sulcus. On the end of the last whorl, which possibly partly represents the posterior end of the body-chamber, the interspaces become much broader and the ribs thicker. In the second specimen, of which apparently a large part of the body-chamber has been preserved, the ribs are very thick on this portion and the interspaces very broad.

The lobe-line resembles most that of *Holcodiscus*. The external saddle and both lateral saddles are symmetrically divided by a secondary lobe. The external saddle is slender and longer than the others. The first lateral lobe is trifold and longer than the ventral lobe. The second lateral saddle does not touch the umbilical margin. On the umbilical surface the lobe-line runs backwards and forms three very small saddles.

Measurements:

	Small spec.	Large spec.
Diameter	64 mm. (1)	62 mm. (1)
Height of last whorl ...	27 „ (0.42)	26 „ (0.42)
Thickness of last whorl	21 „ (0.33)	22 „ (0.35)
Height of penult. whorl	16 „	19 „ (0.30)
Thickness of penult. whorl	13 „	16 „ (0.26)
Diameter of umbilicus	18 „ (0.28)	18 „ (0.29)

The end of the last whorl of the type (small specimen) is damaged on one side and its thickness cannot therefore be accurately given. 21 mm. is its approximate dimension. The sides of the last whorl of the large specimen are also damaged and its thickness is therefore also given approximately. The measurements of the penultimate whorl of the type are not comparable with those of the last whorl, because they had to be taken on another diameter.

The actual diameter of the second specimen is 82 mm. As the other measurements could not be taken on this diameter it was thought better to take them over that of 62 mm., whereby they would all be on one line.

The new form shows great resemblance with species of the group *Holcodiscus Aemilianus* STOL. It differs from *H. Kandi* STOL. sp. by being more involute, by the different arrangement of the ribs and their comparative straightness. *H. madrasinus* STOL. sp. has a last whorl, which is twice as high as broad. It is also more involute and its constrictions are more numerous. In *H. karapadensis* KOSSMAT the ribs are flattened on the flanks and on the periphery, while the sulci are directed much more forwards. *H. buddhaicus* KOSSMAT shows great resemblance in the ornamentation, but differs in the fact that its whorls are broader than high.

Named after FAKU, a former paramount chief of the Pondo tribe.

Holcodiscus africanus n.sp. Pl. XXVI, figs. 3—5.

Shell discoidal. Last whorl higher than broad. Greatest thickness of whorls at the umbilical edge. Sides of whorl nearly flat near the umbilical margin, becoming more and more convex towards the periphery. External surface strongly convex. Umbilical surface low and very steep. Involution moderate, about one-half of the preceding whorl being embraced.

Umbilical surface smooth. Sides of whorl covered with numerous narrow, rounded ribs, which are strong on the sides but very faint at the periphery. Most of the ribs emanate from tubercles on the extreme umbilical margin. The tubercles have mostly a more or less radially directed edge; the ribs emanate from them by twos, while a rib originates at the side of the tubercle in front and behind of this pair. Practically, therefore, there are four ribs to one tubercle. Near an old mouth groove this arrangement may become slightly irregular, through the presence of an extra rib. All the ribs have the same relative length. At irregular intervals the whole whorl is traversed by a deep groove, which is bordered in front by a thick ridge. Near the periphery the hinder border of the groove is formed by an equally strong rib, but on the flanks this rib is very much weaker. The course of the groove is sinuous; at the umbilical edge it is concave forwards, near the middle of the flank it is convex forwards and past this middle it is again concave forwards. Its external end makes a strong anterior sweep towards the periphery. On the periphery it is strongly convex forwards. The anterior rib does not form a tubercle, although it is prominent on the umbilical edge. It is not in touch with any other rib. That portion of the posterior rib, which is actually rib, starts at or near the middle of the flank; the first rib behind this begins at the posterior edge of the groove, about midway between the middle of the flank and the umbilical edge. The second rib behind it starts on the anterior surface of a tubercle, which stands on the edge of the groove. There are four of these constrictions on the last whorl. The course of the other ribs is very regular. They have all got a stretched S-shape, their inner half being very slightly convex and their outer half concave forwards. As far as they are visible on the periphery they are convex forwards. The spaces between the ribs are broader than the ribs and on the middle of the flank only slightly broader than the nearest sulcus in this region.

The lobe-line resembles most that of *Holcodiscus karapadensis* and *H. buddhaicus*. The external saddle and both lateral saddles are symmetrically divided by a secondary lobe. The external saddle is slender and longer than the others. The first lateral lobe is trifid and longer than the ventral lobe. The second lateral saddle does not touch the umbilical margin. The first auxiliary

lobe lies external to the umbilical margin. It is very short and its posterior end lies far in advance of the posterior end of the second lateral lobe. On the umbilical surface the lobe-line runs as far backwards as the posterior end of the second lateral lobe.

Measurements:

Diameter	...	...	...	44 mm. (1)
Height of last whorl	...	approximately	about 17	„ (0.39)
Thickness of last whorl	...	...	about 12	„ (0.27)
Height of penultimate whorl	...	...	8	„ (0.18)
Thickness of penultimate whorl	...	...	8.5 mm.	(0.19)
Diameter of umbilicus	...	...	13.5	„ (0.31)

This is another form belonging to the group of *Holcodiscus Aemilianus* STOL. sp. It differs from *H. Kandi* STOL. sp. by having the ribs flattened on the periphery and by the fact that all the ribs start at the umbilicus. The constrictions have also a different shape. In *H. madrasinus* STOL. sp. the ribs pass with undiminished strength across the periphery, while the constrictions are more numerous and cut off more ribs. There is great resemblance between our form and *H. karapadensis* KOSSMAT. In the Indian ammonite, however, the ribs are not conspicuous on the inner portion of the flank and the sulci are directed more forwards, so that more ribs are cut off. The shape of the sulci is also different. The height of the whorl augments quicker in our form than in *H. karapadensis*. In *H. buddhaicus* the whorls are broader than high.

One side of the last whorl shows a portion of the last mouth edge. If this edge is identified correctly, the body-chamber occupied slightly more than half a whorl.

PLATES XXIV TO XXVI

PLATE XXIV.

Phylloceras umzambiense.

- Fig. 1. Lateral view. $\times 1.87$.
,, 2. Half outline of transverse section at greatest diameter. Natural size.
,, 3. Suture. Natural size.

Gaudryceras amapondense.

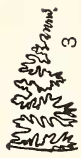
- ,, 4. Lateral view. Natural size.
,, 5. Half outline of transverse section at diameter of 99 mm. Natural size.



1



2



3



5



4

PLATE XXV.

Tetragonites teres.

- Fig. 1. Lateral view. Slightly less than natural size.
,, 2. Outline of transverse section through last whorl, where it has
not suffered from pressure, at a diameter of 57 mm.

Holcodiscus Faku.

- ,, 3. Lateral view of type. Natural size.
,, 4. Outline of transverse section at a diameter of 56 mm. Natural
size.

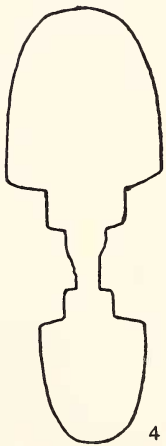
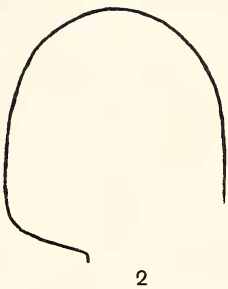


PLATE XXVI.

Holcodiscus Faku.

Fig. 1. Lateral view of large specimen. Natural size.

„ 2. Suture of large specimen. Natural size.

Holcodiscus africanus.

„ 3. Lateral view. Natural size.

„ 4. Half outline of transverse section at diameter of 40 mm.
Natural size.

„ 5. Suture. Natural size.

